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# TRANSMITTAL FORM

to be used for all correspondence after initial filing)

Application Number	09/365,678
Filing Date	August 2, 1999
Inventor(s)	Eshwar PITTAMPALLI
Group Art Unit	2685
Examiner Name	Sheila B. Smith
Attorney Docket Number	29250-002076/US

## ENCLOSURES (check all that apply)

<input type="checkbox"/> Fee Transmittal Form  <input type="checkbox"/> Fee Attached  <input type="checkbox"/> Amendment <input type="checkbox"/> After Final  <input type="checkbox"/> Affidavits/declaration(s)  <input type="checkbox"/> Extension of Time Request  <input type="checkbox"/> Express Abandonment Request  <input type="checkbox"/> Information Disclosure Statement  <input type="checkbox"/> Certified Copy of Priority Document(s)  <input type="checkbox"/> Response to Missing Parts/Incomplete Application  <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Assignment Papers (for an Application)  <input type="checkbox"/> Letter to the Official Draftsperson and _____ Sheets of Formal Drawing(s)  <input type="checkbox"/> Licensing-related Papers  <input type="checkbox"/> Petition  <input type="checkbox"/> Petition to Convert to a Provisional Application  <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address  <input type="checkbox"/> Terminal Disclaimer  <input type="checkbox"/> Request for Refund  <input type="checkbox"/> CD, Number of CD(s) _____	<input type="checkbox"/> After Allowance Communication to Group  <input type="checkbox"/> LETTER SUBMITTING APPEAL BRIEF AND APPEAL BRIEF (w/clean version of pending claims)  <input type="checkbox"/> Appeal Communication to Group (Notice of Appeal, Brief, Reply Brief)  <input type="checkbox"/> Proprietary Information  <input checked="" type="checkbox"/> Submission of Prosecution History and Request for Action  <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):  <p style="text-align: center;"><b>Prosecution History of US Appln. No. 09/365,678</b></p>		
<table border="1" style="width: 100%;"> <tr> <td style="width: 20%;">Remarks</td> <td></td> </tr> </table>			Remarks	
Remarks				

## SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Harness, Dickey & Pierce, P.L.C.	Attorney Name Gary D. Yacura	Reg. No. 35,416
Signature			
Date	March 4, 2005		



PATENT  
29250-002076/US

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: Eshwar PITTAMPALLI Conf.: 2090  
Appl. No.: 09/365,678 Group: 2685  
Filed: August 2, 1999 Examiner: Sheila B. Smith  
For: A METHOD FOR MAINTAINING A COMMUNICATION  
LINK IN WIRELESS NETWORK GROUPS

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**SUBMISSION OF PROSECUTION HISTORY AND REQUEST FOR ACTION**

Customer Service Window  
Randolph Building  
401 Dulany Street  
Alexandria, VA 22314

March 4, 2005

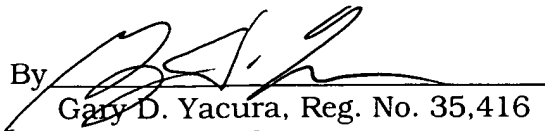
Sir:

A non-final Office Action was mailed on August 15, 2001 and a subsequent reply to the Office Action was mailed on December 17, 2001 with a one-month extension fee. The PTO erroneously issued a Notice of Abandonment on March 26, 2002 as evidenced by a decision from the Office of Petitions dated May 28, 2002. To date no action in response to the Reply mailed December 17, 2001 has been received. Based on our discussion with the Examiner, it appears that the PTO has lost the file. We are submitting a copy of the file history herewith so that the file can be reconstructed.

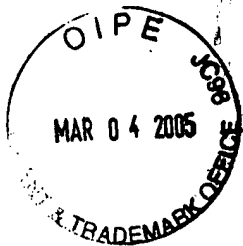
Applicants therefore request an early and favorable action from the Patent Office in response to the Reply mailed on December 17, 2001.

Respectfully submitted,

HARNESSE, DICKEY & PIERCE, P.L.C.

By   
Gary D. Yacura, Reg. No. 35,416  
P.O. Box 8910  
Reston, VA 20195  
(703) 668-8000

GDY/BTM:js  
Attachments



PATENT  
ATTORNEY DOCKET NO. 29250-002076/US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Eshwar PITTAMPALLI CONF. NO.: 2090  
SERIAL NO.: 09/365,678 GROUP: 2685  
FILED: August 2, 1999 EXAMINER: Sheila B. Smith  
FOR: A METHOD FOR MAINTAINING A COMMUNICATION LINK IN  
WIRELESS NETWORK GROUPS

*REVOCATION OF POWER OF ATTORNEY, SUBSTITUTE POWER OF ATTORNEY,  
AND CHANGE IN CORRESPONDENCE ADDRESS*

U.S. Patent and Trademark Office  
220 20th Street S.  
Customer Window  
Crystal Plaza Two, Lobby, Room 1B03  
Arlington, VA 22202

February 23, 2005

FEB 21 2005

Dear Sir:

The Assignee of the above-identified patent application, Lucent Technologies, Inc. having a business office at 600 Mountain Avenue, P.O. Box 636, Murray Hill, NJ 07974-0636, as evidenced by the recordation at Reel 010148 and Frame 0683, hereby revokes any and all previous powers of attorney for the above-identified patent application or issued patent, and hereby appoints the firms of Harness, Dickey & Pierce, P.L.C. and Lucent Technologies as the attorneys of the Assignee to receive all correspondence relating to the above-identified application or patent and to transact all business in the United States Patent and Trademark Office connected therewith, with full power of substitution and revocation, and the Assignee ratifies any act done by the Assignee's attorneys in respect of this patent. The new correspondence address is:

HARNESS, DICKEY & PIERCE, P.L.C.  
P.O. Box 8910  
Reston, VA 20195  
Customer Number 30594

The undersigned (whose title is supplied below) is empowered to sign this Revocation and Substitute Power of Attorney on behalf of the Assignee.

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2/9/15

Date

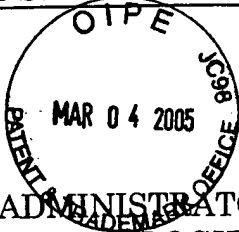
Gregory J. Murgia

Gregory J. Murgia  
Corporate Counsel

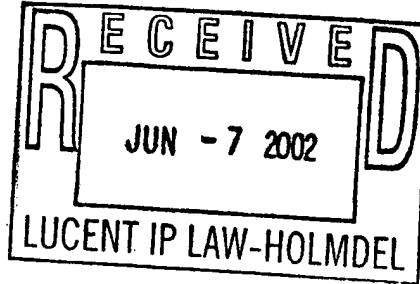


UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS  
UNITED STATES PATENT AND TRADEMARK OFFICE  
WASHINGTON, D.C. 20231  
www.uspto.gov



DOCKET ADMINISTRATOR (3C512)  
LUCENT TECHNOLOGIES INC  
600 MOUNTAIN AVENUE  
P O BOX 636  
MURRAY HILL, NJ 07974-0636



Paper No. 8

**COPY MAILED**

**MAY 28 2002**

**OFFICE OF PETITIONS**

In re Application of  
Eshwar Pittampalli  
Application No. 09/365,678  
Filed: August 2, 1999  
Attorney Docket No. CASE 11

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**ON PETITION**

This is a decision on the petition under 37 CFR 1.137(b), filed April 17, 2002, to revive the above-identified application.

The petition is **DISMISSED AS MOOT** for the reasons stated below.

The above-identified application became abandoned for failure to reply in a timely manner to the non-final Office action mailed August 15, 2001, which set a shortened statutory period for reply of three (3) months. No extensions of time under the provisions of 37 CFR 1.136(a) were obtained. Accordingly, the above-identified application became abandoned on November 16, 2001.

A review of the file record discloses that a non-final Office action was mailed on August 15, 2001, setting a three month shortened statutory period for reply. Extensions of time under the provisions of 37 CFR 1.136(a) were permitted. Therefor, a reply, with the appropriate extension of time fee, was due on or before February 15, 2002. A fee for one month extension of time (\$110) and the Request for Reconsideration were timely filed via certificate of mailing on December 17, 2001 and were received in the Patent and Trademark Office on January 23, 2002. Therefore, since this case was not in fact abandoned at the time of filing the instant petition, the petition to revive was prematurely filed and is dismissed as involving a moot issue.

No petition fee is required and none has been charged.

The Office sincerely apologizes for the inconvenience caused petitioner in this matter.

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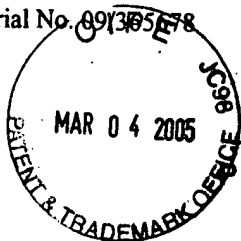
Telephone inquiries concerning this decision should be directed to Wan Laymon at (703) 306-5685.

The application file is being forwarded to Technology Center AU 2744.

A handwritten signature in cursive script, appearing to read "Wan Laymon".

Wan Laymon  
Petitions Examiner  
Office of Petitions  
Office of the Deputy Commissioner  
for Patent Examination Policy

Serial No. 09/365678



IN THE UNITED STATES  
PATENT AND TRADEMARK OFFICE

**PATENT APPLICATION**

Inventor(s): **Eshwar Pittampalli**

Case: **11**

Serial No.: **09/365678**

Filing Date: **August 2, 1999**

Examiner: **S. Smith**

Group Art Unit: **2744**

Title: **A Method For Maintaining A Communication Link In Wireless Network Groups**

**ASSISTANT COMMISSIONER FOR PATENTS  
WASHINGTON, D. C. 20231**

**SIR:**

**INFORMATION DISCLOSURE STATEMENT**  
**UNDER 37 CFR 1.97(b)**

In accordance with 37 CFR 1.97(b), the enclosed Information Disclosure Statement, with attached reference(s), is submitted for consideration in the above-identified application.

Copies of the listed documents are enclosed together with the search report that listed these documents.

**NO FEE IS REQUIRED**

In the event of any non-payment or improper payment of a required fee, the Commissioner is authorized to charge or to credit **Lucent Technologies Deposit Account No. 12-2325** as required to correct the error.

Respectfully,

**Jimmy Goo, Attorney**  
**Reg. No. 36528**  
**973-386-6377**

Date: 03/17/03

**Docket Administrator (Room 3J-219)**  
**Lucent Technologies Inc.**  
**101 Crawfords Corner Road**  
**Holmdel, NJ 07733-3030**

I hereby certify that this correspondence is being deposited with the United States Postal Service in first class mail in an envelope addressed to the Assistant Commissioner for Patents, Washington, DC, 20231, on 3-18-03.

Signature

3-18-03

Date of Signature

## INFORMATION DISCLOSURE STATEMENT

Case Name.	E. Pittampalli 11
Serial No.	09/365678
Applicant:	E. Pittampalli, et al.
Filing Date:	August 2, 1999
Group:	2744

MAR 04 2005

## U.S. PATENT DOCUMENTS

[illegible]

## FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation
	AB	EP 0 766 490	2/4/1997	EPC	H04Q 7/24		Yes
	AC	EP 0 851 633	1/7/1998	EPC	H04L 12/28		Yes
	AD	WO 99/29126	6/10/1999	PCT	H04Q 7/22		Yes

**OTHER (including Author, Title, Date, Pertinent Pages, etc.)**

	AE	Markus Albrecht, et al "IP Services Over Bluetooth: Leading the Way to a New Mobility", <i>Local Computer Networks</i> , Lowell, MA (10/18-20/99), pages 2-11
	AF	Jaap Haartsen, "Bluetooth – The Universal Radio Interface for Ad Hoc, Wireless Connectivity", <i>On – Ericsson Review</i> , Ericsson, Stockholm SE, (1998), pages 110-117
	AG	M. Mouly, et al, "Handover Criteria", <i>GSM System for Mobile Communications</i> , Lassy-Les-Chateaux, Europe Media, FR, (1993), pages 329, 396-401
	AH	European Search Report

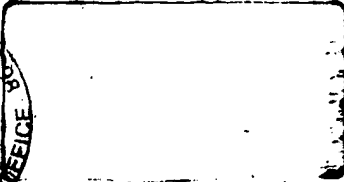
\*\*\*References listed beyond AZ would list as AA-1, AB-2, AC-3 thru AZ-26.

\*\*\*Note First Page ONLY Header/Footer. Subsequent pages must ONLY have page # layout as header

EXAMINER	DATE CONSIDERED
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**\*Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609: Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant





COMMISSIONER OF PATENTS AND TRADEMARKS, BOX Application

Inventor-Case No. Pittampalli 11 JG/WH

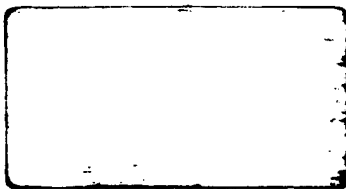
Stamp of the U.S. Patent and Trademark Office acknowledging receipt is requested.

Petition to Revive an Abandoned Application in triplicate  
Copy of Return-Receipt from U.S.P.T.O.  
Copy of Petition for Extension of Time  
Copy of Request for Reconsideration  
Copy of Transmittal Letter



Certificate of Mailing  
Serial No. 09/365678  
Filing Date: August 2, 1999

PT 22 Papers mailed to Commissioner of Patents and Trademarks



IN THE UNITED STATES  
PATENT AND TRADEMARK OFFICE

**Patent Application**

Inventor(s): **Eshwar Pittampalli**

Case: **11**

Serial No.: **09/365678**

Filing Date: **August 2, 1999**

Examiner: **S. Smith**

Group Art Unit: **2744**

Title: **A Method For Maintaining A Communication Link In Wireless  
Network Groups**



I hereby certify that this correspondence is being deposited with the United States Postal Service in first class mail in an envelope addressed to the Assistant Commissioner for Patents, Washington, DC, 20231, on 4/10/02.

Catherine F. Dugan  
Signature

April 10, 2002  
Date of Signature

**ASSISTANT COMMISSIONER FOR PATENTS  
WASHINGTON, D. C. 20231**

**SIR:**

**Petition to Revive an Abandoned Application**

Applicants hereby petition, through their attorney of record, that the above-identified application be restored to the pending files, and that abandonment be held to have been unintentional.

The facts and circumstances surrounding the inadvertent abandonment of this application are as follows:

(1) In August of 2001, an Examiner's action dated 08/15/01 with a three-month response date was received by Lucent Technologies Inc. Bell Laboratories and forwarded to the attorney of record.

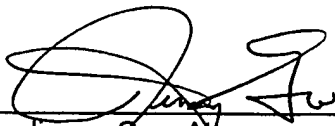
(2) On December 17, 2001, a 3-page Request for Reconsideration Amendment, a transmittal letter with a certificate of mail stamp, and a one-month Petition for Extension of Time was sent to Box Amendment at the United States Patent Office with a certificate of mail signed by the attorney of record's secretary, Catherine F. Dugan (copies attached).

(3) On April 4, 2002, a Notice of Abandonment dated 03/26/02 was received by Lucent technologies Inc. Bell Laboratories and forwarded to the attorney of record.

In view of the above, Applicants respectfully petition that the Abandonment of the above-identified application be withdrawn and the above-identified application be revived.

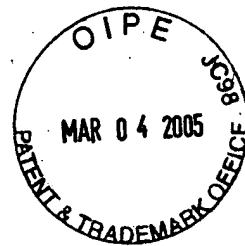
Since the abandonment was not the Applicants' fault, please revive the case without a charge. However if it is determined a fee is due, please charge the fee for the filing of this petition to Deposit Account no. 12-2325. Any deficiency or overpayment should be charged or credited to that same account. Triplicate copies of this Petition are enclosed.

Respectfully,  
Eshwar Pittampalli

By   
Jimmy Goo, Attorney  
Reg. No. 36528  
973-386-6377

Date: 04/10/02

Attach.: Postcard return-receipt from U.S.P.T.O  
Copy of Petition for Extension of Time  
Copy of Request for Reconsideration  
Copy of Transmittal Letter with Certificate of Mail Stamp



IN THE UNITED STATES  
PATENT AND TRADEMARK OFFICE

PATENT APPLICATION

Eshwar Pittampalli

Case Pittampalli 11  
Serial No. 09/365678 Group Art Unit 2744  
Filed August 2, 1999  
Examiner S. Smith  
Title A Method For Maintaining A Communication Link In Wireless Network Groups

ASSISTANT COMMISSIONER FOR PATENTS  
WASHINGTON, D.C. 20231

SIR:

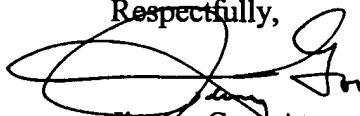
PETITION FOR EXTENSION OF TIME

Applicants petition the Commissioner of Patents and Trademarks to extend the time for response to the Office action dated August 15, 2001 for one (1) month from November 15, 2001 to December 15, 2001. In response to this office action, a Request for Reconsideration amendment is enclosed.

A one-month extension fee of \$110 is due.

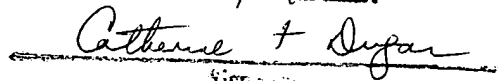
Please charge **Lucent Technologies Deposit Account No. 12-2325** in the amount of \$110.00 to cover the cost of the extension. Any deficiency or overpayment should be charged or credited to **Account No. 12-2325**. Duplicate copies of this petition are enclosed.

Respectfully,

  
Jimmy Goo, Attorney  
Reg. No. 36528  
973-386-6377

Date: 12/17/2001  
Docket Administrator (Room 3J-219)  
Lucent Technologies Inc.  
101 Crawfords Corner Road  
Holmdel, NJ 07733-3030

I hereby certify that this correspondence is being deposited with the United States Postal Service in first class mail in an envelope addressed to the Assistant Commissioner for Patents, Washington, DC, 20231, on 12/17/01.

  
Signature  
12/17/01  
Date of Signature

19



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/365,678	08/02/1999	ESHWAR PITTAMPALLI	CASE-11	2090

7590 03/26/2002

DOCKET ADMINISTRATOR (3C512)  
LUCENT TECHNOLOGIES INC  
600 MOUNTAIN AVENUE  
P O BOX 636  
MURRAY HILL, NJ 079740636



EXAMINER

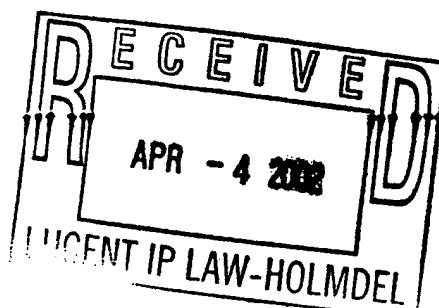
SMITH, SHEILA B

ART UNIT PAPER NUMBER

2685

DATE MAILED: 03/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.



# Notice of Abandonment

Application No.  
09/365,678

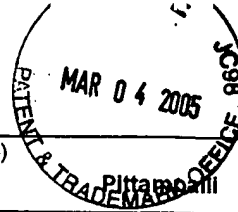
Applicant(s)

Examiner

Sheila Smith

Art Unit

2685



— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

This application is abandoned in view of:

1. ☒ Applicant's failure to timely file a proper reply to the Office letter mailed on Aug 15, 2001.
  - (a) ☐ A reply was received on \_\_\_\_\_ (with a Certificate of Mailing or Transmission dated \_\_\_\_\_), which is after the expiration of the period for reply (including a total extension of time of \_\_\_\_\_ month(s)) which expired on \_\_\_\_\_.
  - (b) ☐ A proposed reply was received on \_\_\_\_\_, but it does not constitute a proper reply under 37 CFR 1.113(a) to the final rejection.

(A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114).
  - (c) ☒ No response has been received.
2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
  - (a) ☐ The issue fee and publication fee, if applicable, was received on \_\_\_\_\_ (with a Certificate of Mailing or Transmission dated \_\_\_\_\_), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance.
  - (b) ☐ The submitted issue fee of \$\_\_\_\_\_ is insufficient. A balance of \$\_\_\_\_\_ is due.

The issue fee required by 37 CFR 1.18 is \$\_\_\_\_\_. The publication fee, if required by 37 CFR 1.18(d) is \$\_\_\_\_\_.
  - (c) ☐ The issue fee and publication fee, if applicable, has not been received.
3. ☐ Applicant's failure to timely file new formal drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
  - (a) ☐ Proposed new formal drawings were received on \_\_\_\_\_ (with a Certificate of Mailing or Transmission dated \_\_\_\_\_), which is after the expiration of the period for reply.
  - (b) ☐ The proposed new formal drawings filed on \_\_\_\_\_ are not acceptable and the period for reply has expired.
  - (c) ☐ No proposed new formal drawings have been received.
4. ☐ The letter of express abandonment which is signed by the attorney or agent of record, the assignee of the entire interest, or all of the applicants.
5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34(a)) upon the filing of a continuing application.
6. ☐ The decision by the Board of Patent Appeals and Interferences rendered on \_\_\_\_\_ and because the period for seeking court review of the decision has expired and there are no allowed claims.
7. ☐ The reason(s) below:

  
EDWARD F. URBAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600

IN THE UNITED STATES  
PATENT AND TRADEMARK OFFICE



**PATENT APPLICATION**

Eshwar Pittampalli

**CASE** 11

**Serial No.** 09/365678

**Group Art Unit** 2744

**Filed** August 2, 1999

**Examiner** S. Smith

**Title** A Method For Maintaining A Communication Link In Wireless Network Groups

**ASSISTANT COMMISSIONER FOR PATENTS**  
**WASHINGTON, D.C. 20231**

**SIR:**

Enclosed is a Request for Reconsideration amendment and Petition for Extension of Time in the above-identified application.

A one-month extension fee of \$110 is due.

In the event of non-payment or improper payment of a required fee, the Commissioner is authorized to charge or to credit **Deposit Account No. 12-2325** as required to correct the error.

Respectfully,

Jimmy Goo, Attorney  
Reg. No. 36528  
973-386-6377

**Date:** 12/17/2001

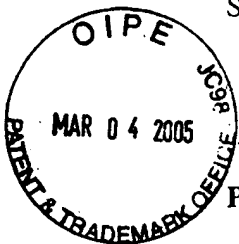
**Docket Administrator (Room 3J-219)**  
**Lucent Technologies Inc.**  
**101 Crawfords Corner Road**  
**Holmdel, NJ 07733-3030**

I hereby certify that this correspondence is being deposited with the United States Postal Service in first class mail in an envelope addressed to the Assistant Commissioner for Patents, Washington, DC, 20231, on 12/17/01.

Signature

12/17/01

Date of Signature



Serial No. 09/365,678

IN THE UNITED STATES  
PATENT AND TRADEMARK OFFICE

I hereby certify that this correspondence is being deposited with the United States Postal Service in first class mail in an envelope addressed to the Assistant Commissioner for Patents, Washington, DC, 20231, on 12/17/01.

Catherine F. Dugan  
Signature

12/17/01  
Date of Signature

Patent Application

Inventors Eshwar Pittampalli  
Case 11  
Serial No. 09/365,678 Group Art Unit 2683  
Filing Date August 02, 1999  
Examiner S Smith  
Title A Method For Maintaining A Communication Link In Wireless Network Groups

ASSISTANT COMMISSIONER OF PATENTS  
WASHINGTON, D.C. 20231

SIR:

REQUEST FOR RECONSIDERATION

In response to the Office Action of August 15, 2001, reconsideration of the application is being requested. Claims 7-19 are in this application.

Claims 1-6 were rejected under 35 U.S.C. §102(b) as being anticipated by Zicker (US Patent No. 6,151,510). Claim 1 recites the limitations of "unregistering at a controller a dependent in communication with a master device using a communication channel on a frequency band  $f_{band}(1)$ " and "transmitting a message to the dependent indicating to the dependent to register with a communications network using a frequency band  $f_{band}(2)$ ." The Office Action alleges Zicker discloses, at column 4, lines 1-9 and column 20, lines 56-59, "unregistering at a controller a dependent in communication with a master device" and "transmitting a message to the dependent." Applicant respectfully disagrees.

First, Zicker does not disclose "unregistering at a controller a dependent in communication with a master device using a communication channel on a frequency band  $f_{band}(1)$ " At column 4, lines 1-9, Zicker discloses exchanging "registration information with the handset to



Serial No. 09/365,678

establish or register the handset in the pico mode.” Exchanging registration information with the handset to register the handset is **not** the same as “unregistering at a controller a dependent...” At column 20, lines 56-59, Zicker discloses “...clearing of the registers...” Column 20, line 55 goes further to describe that the EEPROM ram image registers are being cleared. By contrast, claim 1 does not require a register to be cleared. Claim 1 requires a dependent be unregistered, which is not the same as clearing a register of ram images.

Second, Zicker does not disclose “transmitting a message to the dependent indicating to the dependent to register with a communications network using a frequency band  $f_{\text{band}}(2)$ .” The Office Action does allege that Zicker discloses “transmitting a message to the dependent” **but** fails to allege that this message indicates “to the dependent to register with a communications network using a frequency band  $f_{\text{band}}(2)$ ”, as recited in claim 1. Thus, the Office Action had not alleged that Zicker discloses **all** the limitations of claim 1. Furthermore, Zicker does not disclose “...a message indicating to the dependent to register with a communications network using a frequency band  $f_{\text{band}}(2)$ .” Zicker discloses a piconet that exchanges registration information with the handset to establish or register the handset in the pico mode. When the handset is established or registered in pico mode, the handset then sends a message to the cellular system to forward its incoming calls to an authorizing pico station telephone number, such as the customer home number. See column 4, lines 10-14. The registration information being exchanged between the piconet and handset does not indicate to the handset to register with the cellular system. Accordingly, claim 1 is felt to be patentable under 35 U.S.C. §102(b) over Zicker.

Claims 2-6 depend upon and contain all the limitations of claim 1. Accordingly, claims 2-6 are also felt to be patentable under 35 U.S.C. §102(b) over Zicker.

Claims 7-10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zicker in view of Adachi (US Patent No. 6,256,334). The Office Action relies on the teachings of Zicker to disclose the limitations of claim 1 and the teachings of Adachi to disclose the additional limitations of claims 7-10. For the reasons discussed earlier, Zicker does not disclose all the limitations of claim 1. The Office Action does not allege that Adachi discloses all the limitations of claim 1. Since claims 7-10 depend upon and include all the limitations of claim 1, the combination of Zicker and Adachi does not disclose all the limitations of claims 7-10. Accordingly, it is felt that claims 7-10 are patentable under 35 U.S.C. §103(a) over Zicker in view of Adachi.

Serial No. 09/365,678

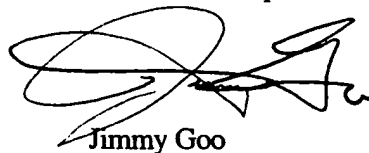
Claims 11-19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zicker in view of Adachi (US Patent No. 6,256,334). The Office Action alleges that everything in claim 11 is disclosed by Zicker in view of Adachi. Specifically, the Office Action alleges claim 1 is disclosed plus Zicker discloses searching at a dependent for one or more frequencies, registering the dependent with a first master device, monitoring for frequencies, and registering the dependent with a second master device. Frequency hopping sequence is alleged to be disclosed by Adachi. Applicant respectfully disagrees. First, for the reasons discussed earlier, Zicker does not disclose all the limitations of claim 1. Second, the Office Action fails to allege that all the limitations of claim 11 are disclosed by either Zicker or Adachi. Specifically, the Office Action fails to allege that Zicker or Adachi discloses **"searching at a dependent for one or more frequency hopping sequences from a set of frequency hopping sequences", "the first frequency hopping sequence being associated with the first master device", "monitoring for frequency hopping sequences in the set" and "registering the dependent with a second master device if the dependent detects a signal transmitted on a second frequency hopping sequence associated with the second master device having a higher signal strength than a signal transmitted on the first frequency hopping sequence."** Third, Zicker nor Adachi do not disclose all the limitations of claim 11. Accordingly, it is felt that claim 11 is patentable under 35 U.S.C. §103(a) over Zicker in view of Adachi.

Claims 12-19 depend upon and contain all the limitations of claim 11. Accordingly, claims 12-19 are also felt to be patentable under 35 U.S.C. §103(a) over Zicker in view of Adachi.

One month extension fee is due.

Respectfully submitted,

Eshwar Pittampalli

A handwritten signature in black ink, appearing to read 'Jimmy Goo', with a stylized, cursive script.

Reg. No. 36,528

Date: 17 December 2001



**UNITED STATES DEPARTMENT OF COMMERCE**  
**Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/365,876

02/02/99

PITTAMPALLI

E

CASE-11

DOCKET ADMINISTRATOR (30512)  
LUCENT TECHNOLOGIES INC  
600 MOUNTAIN AVENUE  
P O BOX 636  
MURRAY HILL NJ 07974-0636

WM02/0815



EXAMINER

SMITH, S

ART UNIT

PAPER NUMBER

2683

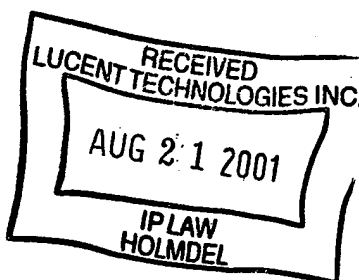
DATE MAILED:

08/15/01

*Due: 11/15/01*

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks



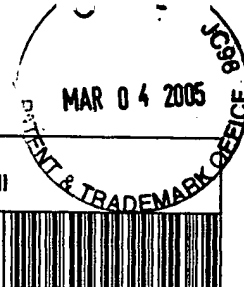
# Office Action Summary

Application No.  
09/365,678

Applicant(s)  
Pittampalli

Examiner  
Sheila Smith

Art Unit  
2683



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1) ☐ Responsive to communication(s) filed on \_\_\_\_\_

2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

## Disposition of Claims

4) ☒ Claim(s) 1-19 is/are pending in the application

4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration

5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.

6) ☒ Claim(s) 1-19 is/are rejected.

7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.

8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirements

## Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some\* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

15) ☒ Notice of References Cited (PTO-892)

18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_

16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)

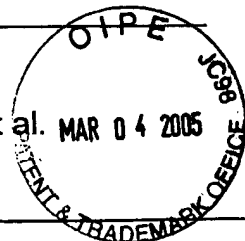
19) ☐ Notice of Informal Patent Application (PTO-152)

17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 2

20) ☐ Other:

## INFORMATION DISCLOSURE STATEMENT

Case Name. E. Pittampalli 11  
 Serial No. 09/365678  
 Applicant: E. Pittampalli, et al.  
 Filing Date: August 2, 1999  
 Group: 2744



## U.S. PATENT DOCUMENTS

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date
	AA	5,574,973	11/12/96	Borth, D. E. et al.	455	33.1	3/16/95
SS	AB						

## FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation
SS	AG	EP 0766 490 A2	4/2/97	EPC	H04Q	7/24	yes
	AH						

## OTHER (including Author, Title, Date, Pertinent Pages, etc.)

SS	AI	"Piconet: Embedded Mobile Networking", Bennett, F. et al., <i>IEEE Personal Communications</i> , Vol. 4 No. 5, pp. 8-15 (10/1/97).
SS	AJ	"Bluetooth-The Universal Radio Interface for ad hoc, Wireless Connectivity", by Haartsen, J., <i>Ericsson Review</i> , Stockholm, SE, No. 3 ppg. 110-117 (1998).
SS	AK	"Handover Execution", Mouly, M. et al., <i>Fr. Lassay-Les-Chateau, Europe, Media</i> , pp. 396-412 (1993).
SS	AL	"Hiperlan: The High Performance Radio Local Area Network Standard", by Halls, G. A., <i>Electronics and Communication Engineering Journal</i> , No. 6 London, GB, pp. 289-296 (12/1/94).

\*\*\*References listed beyond AZ would list as AA-1, AB-2, AC-3 thru AZ-26.

\*\*\*Note First Page ONLY Header/Footer. Subsequent pages must ONLY have page # layout as header

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JUL 10 2001

Technology Center 2600

EXAMINER Spills Sr	DATE CONSIDERED 8-11-01
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\*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609: Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant

Art Unit: 2683

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Zicker ( U.S. Patent Number 6,151,510).

*Regarding claims 1, 2*, Zicker discloses essentially all the claimed invention as set fourth in the instant application, further Zicker discloses a module for providing wireless call communication services through wire-connected telephone equipment, in addition Zicker discloses a unregistering at a controller a dependent in communication with a master device, transmitting a message to the dependent as disclosed in column 4 lines 1-9 and in column 20 lines 56-59.

*Regarding claim 3*, Zicker discloses everything claimed, as applied above (see claim 1) additionally, Zicker discloses transmitting another message indicating to the communications network to register the dependent as disclosed in column 4 lines 61-67.

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*Regarding claims 4, 5*, Zicker discloses everything claimed, as applied above (see claim 1) additionally, Zicker discloses dependent is unregistered when a strength if a signal is transmitted as disclosed in column 4 lines 33-39 and in column 20 lines 56-59.

*Regarding claim 6*, Zicker discloses everything claimed, as applied above (see claim 5) additionally, Zicker discloses monitoring a communication channel associated with the master device in column 5 lines 7-9.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 7-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zicker in view of Adachi (U.S. Patent Number 6,256,334).

*Regarding claims 7,14,19*, Zicker discloses everything claimed, as applied above (see claim 1) additionally, Zicker discloses a communication channel as disclosed in column 9 lines 18-21. However, Zicker fails to specifically disclose frequency hopping sequence.

In the same field of endeavor, Adachi further discloses a base station apparatus for radiocommunication network method of controlling communication across radiocommunication

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network radiocommunication network system, and radio terminal apparatus. In addition Adachi discloses a frequency hopping sequence in column 1 lines 63-65.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to improve Zicker by modifying a module for providing wireless call communication services through wire-connected telephone equipment with a frequency hopping sequence as taught by Adachi for the purpose of subjecting the information to a secondary modulation.

*Regarding claims 8 -10,14 -17, 19*, Zicker in view of Adachi discloses everything claimed, as applied above (see claim 1) additionally, Zicker discloses transmitting using a frequency band  $f_{\text{band}}(2)$  in column 3 lines 5-11.

*Regarding claim 11*, Zicker in view of Adachi discloses everything claimed, as applied above (see claim 1) additionally, Zicker discloses searching at a dependent for one or more frequencies, registering the dependent with a first master device, monitoring for frequencies, registering the dependent with a second master device in column 3 lines 5-35. However, Zicker fails to specifically disclose frequency hopping sequence.

In the same field of endeavor, Adachi further discloses a base station apparatus for radiocommunication network method of controlling communication across radiocommunication network radiocommunication network system, and radio terminal apparatus. In addition Adachi discloses a frequency hopping sequence in column 1 lines 63-65.



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Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to improve Zicker by modifying a module for providing wireless call communication services through wire-connected telephone equipment with a frequency hopping sequence as taught by Adachi for the purpose of subjecting the information to a secondary modulation.

*Regarding claim 18*, Zicker in view of Adachi discloses everything claimed, as applied above (see claim 1) additionally, Zicker discloses receiving a first registration message at a master device, transmitting a second registration message, monitoring a strength at the master device, transmitting an unregistration message in column 4 lines 1-39. However, Zicker fails to specifically disclose frequency hopping sequence.

In the same field of endeavor, Adachi further discloses a base station apparatus for radiocommunication network method of controlling communication across radiocommunication network radiocommunication network system, and radio terminal apparatus. In addition Adachi discloses a frequency hopping sequence in column 1 lines 63-65.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to improve Zicker by modifying a module for providing wireless call communication services through wire-connected telephone equipment with a frequency hopping sequence as taught by Adachi for the purpose of subjecting the information to a secondary modulation.

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***Citation of Pertinent Prior Art***

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

***Dent et al.*** (U. S. Patent Number 5,526,402) discloses radio personal communications system and method for initiating communications between a base station and a cellular terminal;

***Zicker*** (U. S. Patent Number 6,243,593) discloses module for providing wireless call communication services through wire-connected telephone equipment;

Art Unit: 2683

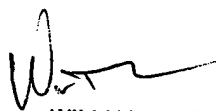
***Conclusion***

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheila Smith whose telephone number is (703) 305-0104. The examiner can normally be reached on Monday through Friday from 6:30 a.m. to 3:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost can be reached (703)308-5318. The technical center receptionist phone number is (703) 305-4700. The fax number for the group is (703) 308-6306.

S. Smith

August 12, 2001

  
WILLIAM TROST  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600

# **Notice of References Cited**

Applicant/Patent

Pittampalli

Application/Control No.

09/365,678

Examiner

Shella Smith

Art Unit

2683

Page 1 of 1

## **U.S. PATENT DOCUMENTS**

	Document Number Country Code-Number-Kind Code	Date MM-YYYY <sup>1</sup>	Name	Classification <sup>2</sup>	
A	6,256,334	7/2001	Adachi	375	132
B	6,151,510	11/2000	Zicker	455	553
C	6,243,593	6/2001	Zicker	455	553
D	5,526,402	6/1996	Dent Et. Al	379	59
E					
F					
G					
H					
I					
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K					
L					
M					

## **FOREIGN PATENT DOCUMENTS**

	Document Number Country Code-Number-Kind Code	Date MM-YYYY <sup>1</sup>	Country	Name	Classification <sup>2</sup>	
N						
O						
P						
Q						
R						
S						
T						

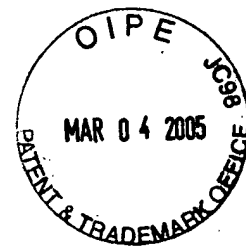
## **NON-PATENT DOCUMENTS**

	Include, as applicable: Author, Title, Date, Publisher, Edition or Volume, Pertinent Pages
U	
V	
W	
X	

<sup>\*</sup> A copy of this reference is not being furnished with this Office action. See MPEP § 707.05(a).

<sup>1</sup> Dates in MM-YYYY format are publication dates.

<sup>2</sup> Classifications may be U.S. or foreign.



IN THE UNITED STATES  
PATENT AND TRADEMARK OFFICE

PATENT APPLICATION

Inventor(s): Eshwar Pittampalli

Case: 11

Serial No.: 09/365678

Filing Date: August 2, 1999

Examiner: Group Art Unit: 2744

Title: A Method For Maintaining A Communication Link In Wireless  
Network Groups

ASSISTANT COMMISSIONER FOR PATENTS  
WASHINGTON, D. C. 20231

SIR:

INFORMATION DISCLOSURE STATEMENT  
UNDER 37 CFR 1.97(b)

In accordance with 37 CFR 1.97(b), the enclosed Information Disclosure Statement, with attached reference(s), is submitted for consideration in the above-identified application.

Copies of the listed documents are enclosed together with the search report that listed these documents.

**NO FEE IS REQUIRED**

In the event of any non-payment or improper payment of a required fee, the Commissioner is authorized to charge or to credit **Lucent Technologies Deposit Account No. 12-2325** as required to correct the error.

Respectfully

Jimmy Goo, Attorney  
Reg. No. 36528

973-386-6377

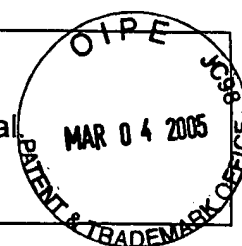
Date: 06/29/01

Docket Administrator (Room 3C-512)  
Lucent Technologies Inc.

I hereby certify that this correspondence is being deposited with the United States Postal Service in first class mail in an envelope addressed to the Assistant Commissioner for Patents, Washington, DC, 20231, on 6/29/01.

  
Signature  
Date of Signature

<b>INFORMATION DISCLOSURE STATEMENT</b>	Case Name.	E. Pittampalli 11
	Serial No.	09/365678
	Applicant:	E. Pittampalli, et al.
	Filing Date:	August 2, 1999
	Group:	2744

**U.S. PATENT DOCUMENTS**

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date
	AA	5,574,973	11/12/96	Borth, D. E. et al.	455	33.1	3/16/95
	AB						

**FOREIGN PATENT DOCUMENTS**

		Document Number	Date	Country	Class	Subclass	Translation
	AG	EP 0766 490 A2	4/2/97	EPC	H04Q	7/24	yes
	AH						

**OTHER (including Author, Title, Date, Pertinent Pages, etc.)**

	AI	"Piconet: Embedded Mobile Networking", Bennett, F. et al., <i>IEEE Personal Communications</i> , Vol. 4 No. 5, pp. 8-15 (10/1/97).
	AJ	"Bluetooth-The Universal Radio Interface for ad hoc, Wireless Connectivity", by Haartsen, J., <i>Ericsson Review</i> , Stockholm, SE, No. 3 ppg. 110-117 (1998).
	AK	"Handover Execution", Mouly, M. et al., <i>Fr. Lassay-Les-Chateau, Europe, Media</i> , pp. 396-412 (1993).
	AL	"Hiperlan: The High Performance Radio Local Area Network Standard", by Halls, G. A., <i>Electronics and Communication Engineering Journal</i> , No. 6 London, GB, pp. 289-296 (12/1/94).

\*\*\*References listed beyond AZ would list as AA-1, AB-2, AC-3 thru AZ-26.

\*\*\*Note First Page ONLY Header/Footer. Subsequent pages must ONLY have page # layout as header

<b>EXAMINER</b>	<b>DATE CONSIDERED</b>
-----------------	------------------------

\***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609: Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant

**FILING RECEIPT**

UNITED STATES DEPARTMENT OF COMMERCE  
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Washington, D.C. 20231



APPLICATION NUMBER	FILING DATE	GRP ART UNIT	FIL FEE REC'D	ATTORNEY DOCKET NO.	DRWGS	TOT CL	IND CL
09/365,678	08/02/99	2744	\$760.00	CASE-11	4	19	3

DOCKET ADMINISTRATOR (3C512)  
LUCENT TECHNOLOGIES INC  
600 MOUNTAIN AVENUE  
P O BOX 636  
MURRAY HILL NJ 07974-0636

**BEST AVAILABLE COPY**

Receipt is acknowledged of this nonprovisional Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Customer Service Center. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts of Application" ("Missing Parts Notice") in this application, please submit any corrections to this Filing Receipt with your reply to the "Missing Parts Notice." When the PTO processes the reply to the "Missing Parts Notice," the PTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

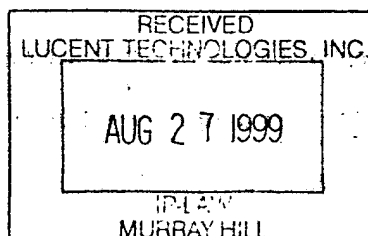
**Applicant(s)** ESHWAR PITTAMPALLI, RANDOLPH, NJ.

IF REQUIRED, FOREIGN FILING LICENSE GRANTED 08/23/99

**TITLE**

# METHOD FOR MAINTAINING A COMMUNICATION LINK IN WIRELESS NETWORK GROUPS

PRELIMINARY CLASS: 455



DATA ENTRY BY: WILLIAMS, EVERETT, TEAM: 01 DATE: 08/23/99

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1

**(See reverse for new important information)**

IN THE UNITED STATES  
PATENT AND TRADEMARK OFFICE



PATENT APPLICATION

Eshwar Pittampalli

CASE 11

TITLE A Method For Maintaining A Communication Link In Wireless Network Groups

ASSISTANT COMMISSIONER FOR PATENTS  
WASHINGTON, D.C. 20231

SIR:

NEW APPLICATION UNDER 37 CFR 1.53(b)

Enclosed are the following papers relating to the above-named application for patent:

Specification  
4 Informal sheets of drawing(s)  
1 Assignment with Cover Sheet  
Declaration and Power of Attorney

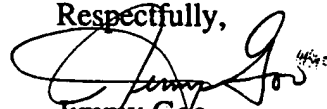
CLAIMS AS FILED				
	NO. FILED	NO. EXTRA	RATE	CALCULATIONS
Total Claims	19 - 20 =	0	x \$18 =	\$0
Independent Claims	3 - 3 =	0	x \$78 =	\$0
Multiple Dependent Claim(s), if applicable			\$260 =	\$0
Basic Fee				\$760
TOTAL FEE:				\$760

Please file the application and charge Lucent Technologies Deposit Account No. 12-2325 the amount of \$760, to cover the filing fee. Duplicate copies of this letter are enclosed. In the event of non-payment or improper payment of a required fee, the Commissioner is authorized to charge or to credit Deposit Account No. 12-2325 as required to correct the error.

The Assistant Commissioner for Patents is hereby authorized to treat any concurrent or future reply, requiring a petition for extension of time under 37 CFR § 1.136 for its timely submission, as incorporating a petition for extension of time for the appropriate length of time if not submitted with the reply.

Please address all correspondence to Docket Administrator (Room 3C-512), Lucent Technologies Inc., 600 Mountain Avenue, P. O. Box 636, Murray Hill, New Jersey 07974-0636. However, telephone calls should be made to me at 973-386-6377.

Respectfully,

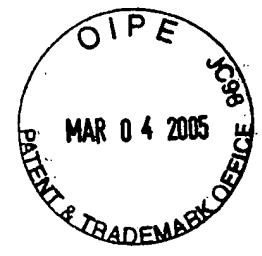
  
Jimmy Goo  
Reg. No. 86528  
Attorney for Applicant(s)

Date: AUG - 2 1999  
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Idrisah Marshall  
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## **A Method For Maintaining A Communication Link In Wireless Network Groups**

### **FIELD OF THE INVENTION**

The present invention relates generally to wireless communication systems and,  
5 in particular, to wireless networks.

### **BACKGROUND OF THE RELATED ART**

FIG. 1 depicts a wireless network 10 referred to herein as a piconet in accordance with the prior art. Piconet 10 comprises a master 12 and one or more dependents 14. Master 12  
10 is a communication device that may be directly or indirectly connected to communications network 16, such as a Public Switching Telephone Network (PSTN) or another wireless network. Master 12 being operable to communicate with dependents 14 over a wireless interface and having hardware and software for controlling and managing data or voice transmissions among dependents 14 and communications network 16. Dependents 14 are devices for communicating  
15 with master 12 over a wireless interface. For example, suppose master 12 is a telephone switchboard that is connected to a PSTN and dependent 14 is a wireless telephone. In this example, the communication path goes from the wireless telephone to the telephone switchboard to the PSTN, and vice-versa.

Master 12 and dependents 14 are operable to communicate with each other so  
20 long as dependents 14 are within the coverage area of the piconet, which is defined by the communication range of master 12. Typically, master 12 has a communication range of a few meters. If dependents 14 are mobile devices, such as wireless terminals, and move beyond the communication range of master 12, dependents 14 would be unable to communicate with master 12 and, thus, be unable to maintain a communication link with communications network 16.  
25 Accordingly, there exists a need for dependents 14 to maintain communication with communications network 16 when dependents 14 move outside the coverage area of the piconet.

### **SUMMARY OF THE INVENTION**

The present invention is a method and apparatus for maintaining communication  
30 between a dependent and a communications network when the dependent is outside a coverage area associated with its master using a controller and a communications network. In one embodiment, when the dependent is in a piconet, the dependent is within communication range of its master using a communication channel on frequency band  $f_{\text{band}}(1)$ . When the dependent moves outside the piconet, the dependent should be within communication range of the controller and,

thus, switches to another communication channel within frequency band  $f_{\text{band}}(1)$  such that it may communicate with the controller. When the dependent moves outside the communication range of the controller, the dependent should be within communication range of a communications network or a base station and, thus, switches to a communication channel within another  
 5 frequency band  $f_{\text{band}}(2)$ .

### BRIEF DESCRIPTION OF THE DRAWINGS

The features, aspects, and advantages of the present invention will become better understood with regard to the following description, appended claims, and accompanying  
 10 drawings where

FIG. 1 depicts a wireless network referred to herein as a piconet in accordance with the prior art;

FIG. 2 a wireless network group in accordance with the present invention;

FIG. 3 depicts a flowchart of a frequency searching protocol used in accordance with one  
 15 embodiment of the present invention; and

FIG. 4 depicts a flowchart illustrating the operation of a master device.

### DETAILED DESCRIPTION

FIG. 2 depicts a wireless network group 20 in accordance with the present  
 20 invention. Wireless network group 20 has an associated geographical area 21, such as one or more floors within a building, which is within a coverage area or cell 32 associated with base station 30 is a part of a communications network. Base station 30 is well-known in the art. Wireless network group 20 comprises a plurality of piconets 22- $j$  and a controller 24 which are within the geographical area 21. Each piconet 22- $j$  comprises a master 26- $j$  and zero or more  
 25 dependents 28- $k$ . Master 26- $j$  being a communication device for communicating with dependents 28- $k$  and controller 24, and having hardware and software for controlling and managing data transmissions among dependents 28- $k$  and controller 24.

Masters 26- $j$  are private local devices in control of communications in designated piconet coverage areas among its dependents 28- $k$  and controller 24. By contrast, base station 30  
 30 is a public unit that provides wireless communications services for designated macro and/or micro cellular or PCS areas, i.e., cell 32. Base station 30 is also operable to communicate with controller 24 over a wireless interface on frequency band  $f_{\text{band}}(2)$ .

Masters 26- $j$  being operable to communicate with dependents 28- $k$  over a wireless interface using frequency band  $f_{\text{band}}(1)$  and with controller 24 over a wired or wireless

interface. When communicating with dependents 28- $k$ , each master 26- $j$  uses a communication channel defined by a unique frequency hopping sequence  $f_j$ , wherein the frequency hopping sequence  $f_j$  is a part of a finite set of frequency hopping sequences  $f_{\text{set}}$  within frequency band  $f_{\text{band}}(1)$ . Each master 26- $j$  has an associated communication range  $R_j$  in which master 26- $j$  can communicate with dependents 28- $k$ . Such communication range  $R_j$  defines the coverage area of piconet 22- $j$ . Note that a master 26- $j$  in one piconet may also be a dependent in another piconet.

Controller 24 is a communication device being operable to communicate with master 26- $j$ , dependents 28- $k$  and base station 30, and having hardware and software for controlling and managing data transmissions among dependents 28- $k$  and masters 26- $j$ .

Controller 24 communicates with base station 30 over a wireless interface using frequency band  $f_{\text{band}}(2)$  and with dependents 28- $k$  over a wireless interface using frequency band  $f_{\text{band}}(1)$ . When communicating with dependents 28- $k$ , controller 24 uses a communication channel defined by a unique frequency hopping sequence  $f_c$ , wherein the frequency hopping sequence  $f_c$  is also a part of the finite set of frequency hopping sequences  $f_{\text{set}}$  within frequency band  $f_{\text{band}}(1)$ . Controller 24 has an associated communication range  $R_c$  in which controller 24 can communicate with dependents 28- $k$ . The range  $R_c$  of controller 24 may be supplemented via access points 25, which are devices for extending the range of controller 24. Such communication range  $R_c$  defines the geographical area 21 associated with wireless network group 20. Note that there may be gaps 23 in the geographical area 21 where controller 24 may not be able to communicate with dependents 24- $k$ . In one embodiment, frequency band  $f_{\text{band}}(1)$  is approximately 2.4 GHz and frequency band  $f_{\text{band}}(2)$  is either approximately 800 or 1800 MHz.

Controller 24 interfaces with base station 30 in the following manner. Controller receives data from masters 26- $j$  and/or dependents 28- $k$  on a communication channel defined by frequency hopping sequence  $f_c$  on frequency band  $f_{\text{band}}(1)$  and subsequently demodulates and re-modulates the data onto a communication channel on frequency band  $f_{\text{band}}(2)$ , and vice-versa.

Dependents 28- $j$  are communication devices for communicating with masters 26- $j$ , controller 24 and base station 30 or equivalent. Dependents 28- $k$  are operable to communicate with any master 26- $j$  or controller 24 using any of the frequency hopping sequences  $f_j$  or  $f_c$  from the finite set of frequency hopping sequences  $f_{\text{set}}$ . Dependents 28- $k$  are also operable to communicate with base station 30 over a wireless interface using frequency band  $f_{\text{band}}(2)$ .

When dependents 28- $k$  are activated or already active, dependents 28- $k$  follow a frequency searching protocol to establish a communication link with a master device or base station 30, wherein master devices include masters 26- $j$  and controller 24. Once a communication link is established with a master device, dependents 28- $k$  can communicate with base station 30

through the linked master device. Specifically, if the master device is a master 26- $j$ , the transmission path spans from dependents 28- $k$ , to its master 26- $j$ , to controller 24 and to base station 30, and vice-versa. If the master device is controller 24, the transmission path spans from dependents 28- $k$ , to controller 24 and to base station 30, and vice-versa. Note that a communication link can also be established directly between a dependent 28- $k$  and base station 30.

FIG. 3 depicts a flowchart 300 of a frequency searching protocol used in accordance with one embodiment of the present invention. In step 310, dependent 28- $k$  is activated. In step 315, dependent 28- $k$  searches for a signal transmitted on any of the frequency hopping sequences  $f_j$  or  $f_c$  in the finite set of frequency hopping sequences  $f_{set}$ . If one or more such signals are detected, in step 320, dependent 28- $k$  selects a master device associated with the detected signal having the strongest or an acceptable signal-to-noise ratio to be its master. In one embodiment, a signal transmitted on any of the frequency hopping sequences  $f_j$  or  $f_c$  is deemed detected if it has a signal-to-noise ratio over a threshold value. In one embodiment, if a signal with an acceptable signal-to-noise ratio is detected on any frequency hopping sequence  $f_j$  and on frequency hopping sequence  $f_c$ , the master associated with the frequency hopping sequence  $f_j$  is selected as the master device.

In step 322, dependent 28- $k$  transmits a master registration message to its selected master device indicating dependent 28- $k$ 's selection of its master device. The master registration message being transmitted on the frequency hopping sequence associated with the selected master device. In steps 325 and 335, if the selected master device is controller 24, upon receipt of the master registration message, dependent 28- $k$  will be registered with and by controller 24 in a controller registry, which is a database or registry indicating master devices to which dependents 28- $k$  are registered.

However, if the selected master device is a master 26- $j$ , upon receiving the master registration message, in step 330, the master 26- $j$  transmits a controller registration message to controller 24 indicating to controller 24 to register dependent 28- $k$  with master 26- $j$ . The controller registration message being transmitted on the frequency hopping sequence  $f_c$  using a wired or wireless interface. Upon receiving the controller registration message, in step 335, controller 24 registers dependent 28- $k$  with master 26- $j$  in the controller registry. Note that if dependent 28- $k$  was previously registered with another master device in the controller registry, the previous registration is superseded or replaced with the current registration in the controller registry. In one embodiment, master 26- $j$  also registers its dependents 28- $k$  in a master registry,

which is a database or registry belonging to master 26-*j* and indicating the associated dependents 28-*k*.

Once dependent 28-*k* has been registered with a master device, or has transmitted the master registration message, in step 338, dependent 28-*k* continuously searches for signals transmitted on any of the frequency hopping sequences  $f_j$  or  $f_c$ , but not for signals transmitted on frequency band  $f_{\text{band}}(2)$ . In step 339, if dependent 28-*k* detects one or more such signals with a stronger signal-to-noise ratio than the signal being transmitted by the master device to which dependent 28-*k* is currently registered, dependent 28-*k* will go to step 320 and select a new master device with which to be registered. Otherwise, dependent 28-*k* will continue to search for signals transmitted on any of the frequency hopping sequences  $f_j$  or  $f_c$ . In an alternate embodiment, in step 338, dependent 28-*k* also searches for signals transmitted on frequency band  $f_{\text{band}}(2)$ .

Note that when dependent 28-*k* has been registered in the controller registry, controller 24 transmits a controller-base station registration message to base station 30 or a communications network indicating to base station 30 to set up a communications link for dependent 28-*k* through controller 24, wherein the controller-base station registration message is transmitted on frequency band  $f_{\text{band}}(2)$ . Upon receiving the controller-base station registration message, base station 30 registers dependent 28-*k* in a registry and provides communication services to dependent 28-*k* via controller 24. Once this communication link has been set up, the communication link from and to dependent 28-*k* to master 26-*j* to controller 24 to base station 30 is completed.

Returning to step 315, if no signals transmitted on any frequency hopping sequences  $f_j$  or  $f_c$  were detected, in step 340, dependent 28-*k* searches for a signal transmitted by base station 30 or a communications network on frequency band  $f_{\text{band}}(2)$ . If such a signal is detected, in step 345, dependent 28-*k* proceeds to register with base station 30, as is well-known in the art. Otherwise, service is denied to dependent 28-*k* and dependent 28-*k* continues to step 315. In one embodiment, a signal transmitted by base station 30 on frequency band  $f_{\text{band}}(2)$  is deemed detected if it has a signal-to-noise ratio over a threshold value.

After dependent 28-*k* has been registered with base station 30, in step 350, dependent 28-*k* will continue to search for signals transmitted on any of the frequency hopping sequences  $f_j$  or  $f_c$  on frequency band  $f_{\text{band}}(1)$ . If dependent 28-*k* detects one or more such signals, dependent 28-*k* will go to step 320 and select a master device with which to be registered. When dependent 28-*k* registers with the master device, the master device will subsequently cause controller 24 to re-register dependent 28-*k* at base station 30 via controller 24. For example, when dependent 28-*k* sends a master registration message to its new master device and is

subsequently registered at controller 24, as described steps 320-335, controller 24 transmits a base station re-registration message to base station 30 indicating or instructing base station 30 to re-register dependent 28- $k$  via controller 24 wherein the base station re-registration message is transmitted on frequency band  $f_{\text{band}}(2)$ . When base station 30 receives the base station re-registration message, base station 30 re-registers dependent 28- $k$  via controller 24. By re-registering dependent 28- $k$  via controller 24, base station 30 knows to communicate with dependent 28- $k$  through controller 24.

Once dependent 28- $k$  is registered with a master device, the master device can cause dependent 28- $k$  to be unregistered. FIG. 4 depicts a flowchart 400 illustrating the operation of a master device. In step 410, the master device with which dependent 28 is registered continuously monitors the signal strength or signal-to-noise ratio of signals being transmitted from dependent 28- $k$ . In step 420, if such signal strength or signal-to-noise ratio falls below a threshold value or another value, the master device will cause dependent 28- $k$  to be unregistered in the controller registry. In the case where dependent 28- $k$  is currently registered with a master 26- $j$  in the controller registry (i.e., the master device is a master 26- $j$ ), in steps 430 to 450, master 26- $j$  will transmit a controller unregistration message to controller 24 indicating to controller 24 to unregister dependent 28- $k$  from master 26- $j$  in the controller registry. In the case where dependent 28- $k$  is currently registered with controller 24 in the controller registry (i.e., the master device is controller 24), in steps 430 and 450, controller 24 will unregister dependent 28- $k$  from itself in the controller registry.

Whenever controller 24 unregisters any dependent 28- $k$  without re-registering the same dependent 28- $k$  with another master 26- $j$  or itself (as in the case where dependent 28- $k$  selects a new master device), in step 455, controller 24 will transmit a handoff message to base station 30 indicating to base station 30 the profile of dependent 28- $k$  and to start communicating with the dependent 28- $k$  being unregistered by controller 24 from the controller registry. When base station 30 receives the handoff message, base station 30 re-registers dependent 28- $k$  in its registry such that base station 30 now knows to communicate directly with dependent 28- $k$  (and not through controller 24). The handoff message being transmitted on frequency band  $f_{\text{band}}(2)$ . Subsequently, in step 460, controller 24 transmits a base station registration message to that dependent 28- $k$  indicating or instructing dependent 28- $k$  to search for signals transmitted on frequency band  $f_{\text{band}}(2)$  and, upon detection, to re-register with base station 30 associated with the detected signal on frequency band  $f_{\text{band}}(2)$ . In another embodiment, once dependent 28- $k$  receives the base station registration message, dependent 28- $k$  starts to communicate directly with base station 30 without searching for signals transmitted on frequency band  $f_{\text{band}}(2)$ . The base station

registration message being transmitted on frequency band  $f_{\text{band}}(2)$ . Alternately, the base station registration message may be transmitted on frequency hopping sequence  $f_c$  alone or in conjunction with the base station registration message being transmitted on frequency band  $f_{\text{band}}(2)$ .

5                   Note that FIG. 2 depicts an embodiment in which cell 32, i.e., coverage area of base station 30, includes the geographical area 21 associated with wireless network group 20. In other words, any area within geographical area 21 should be within communication range of base station 30 except for gaps 23 in the geographical area 21. Note that in most cases, gaps 23 in geographical area 21 should not be gaps in cell 32. When dependent 28- $k$  leaves a piconet, it is  
10                   assumed to still be within the geographical area 21 and, thus, should also be within the coverage area of base station 30 thereby allowing dependent 28- $k$  to register with base station 30 once it leaves the piconet 22- $j$ . Other embodiments are possible. In another embodiment, the geographical area 21 may be in the coverage areas of two adjacent base stations. In this embodiment, controller 24 may instruct dependent 28- $k$  to register with a particular base station  
15                   based on the piconet 22- $j$  from which dependent 28- $k$  is leaving. In another embodiment, part of the geographical area 21 is in the coverage area of base station 30 and the other part of the coverage area 21 is not in the coverage area of any base station. In this embodiment, controller 24 may instruct dependent 28- $k$  upon leaving a piconet 22- $j$  to attempt to register with base station 30 regardless of whether dependent 28- $k$  is within cell 32.

20                   It should be understood that although the present invention is described herein with reference to certain embodiments, other embodiments are possible. Accordingly, the present invention should not be limited to the embodiments disclosed herein.

I claim:

- 1 1. A method of maintaining a communication link comprising the steps of:  
 2                   unregistering at a controller a dependent in communication with a master device  
 3                   using a communication channel on a frequency band  $f_{\text{band}}(1)$ ; and  
 4                   transmitting a message to the dependent indicating to the dependent to register  
 5                   with a communications network using a frequency band  $f_{\text{band}}(2)$ .
  
- 1 2. The method of claim 1 comprising the additional steps of:  
 2                   receiving a registration message from the master device on the frequency band  
 3                    $f_{\text{band}}(1)$  indicating the dependent; and  
 4                   registering the dependent with the master device before the step of unregistering.
  
- 1 3. The method of claim 1 comprising the additional step of:  
 2                   transmitting another message indicating to the communications network to  
 3                   register the dependent with the communications network via the controller.
  
- 1 4. The method of claim 1, wherein the dependent is unregistered when an unregistration  
 2                   message is received.
  
- 1 5. The method of claim 1, wherein the dependent is unregistered when a strength of a signal  
 2                   transmitted between the dependent and the master device on the frequency band  $f_{\text{band}}(1)$   
 3                   falls below a threshold value.
  
- 1 6. The method of claim 5 comprising the additional step of:  
 2                   monitoring a communication channel associated with the master device on the  
 3                   frequency band  $f_{\text{band}}(1)$ .
  
- 1 7. The method of claim 6, wherein the communication channel is defined by a frequency  
 2                   hopping sequence.
  
- 1 8. The method of claim 1, wherein the message is transmitted using a frequency band  
 2                    $f_{\text{band}}(2)$ .



- 1    9.    The method of claim 1 comprising the additional step of:  
2                    transmitting a handoff message to the communications network indicating to the  
3                    communications network to communicate directly with the dependent.
- 1    10.   The method of claim 9, wherein the handoff message is transmitted on the frequency  
2                    band  $f_{\text{band}}(2)$ .
- 1    11.   A method for maintaining a communication link comprising the steps of:  
2                    searching at a dependent for one or more frequency hopping sequences from a set  
3                    of frequency hopping sequences;  
4                    registering the dependent with a first master device when a first frequency  
5                    hopping sequence is detected, the first frequency hopping sequence being associated with  
6                    the first master device;  
7                    monitoring for frequency hopping sequences in the set;  
8                    registering the dependent with a second master device if the dependent detects a  
9                    signal transmitted on a second frequency hopping sequence associated with the second  
10                    master device having a higher signal strength than a signal transmitted on the first  
11                    frequency hopping sequence.
- 1    12.   The method of claim 11, wherein the step of registering the dependent with the first  
2                    master device comprises the step of:  
3                    transmitting a registration message to the first master device using the first  
4                    frequency hopping sequence.
- 1    13.   The method of claim 11, wherein the step of registering the dependent with the second  
2                    master device comprises the step of:  
3                    transmitting a registration message to the second master device using the second  
4                    frequency hopping sequence.
- 1    14.   The method of claim 11, wherein the set of frequency hopping sequences use a first  
2                    frequency band  $f_{\text{band}}(1)$ .
- 1    15.   The method of claim 14 comprising the additional step of:

2                    searching for a signal transmitted using a second frequency band  $f_{\text{band}}(2)$  if no  
3                    frequency hopping sequence in the set are detected.

1    16.    The method of claim 15 comprising the additional step of:  
2                    registering with a communication network when the second frequency band  
3                     $f_{\text{band}}(2)$  is detected, the communications network being associated with the second  
4                    frequency band  $f_{\text{band}}(2)$ .

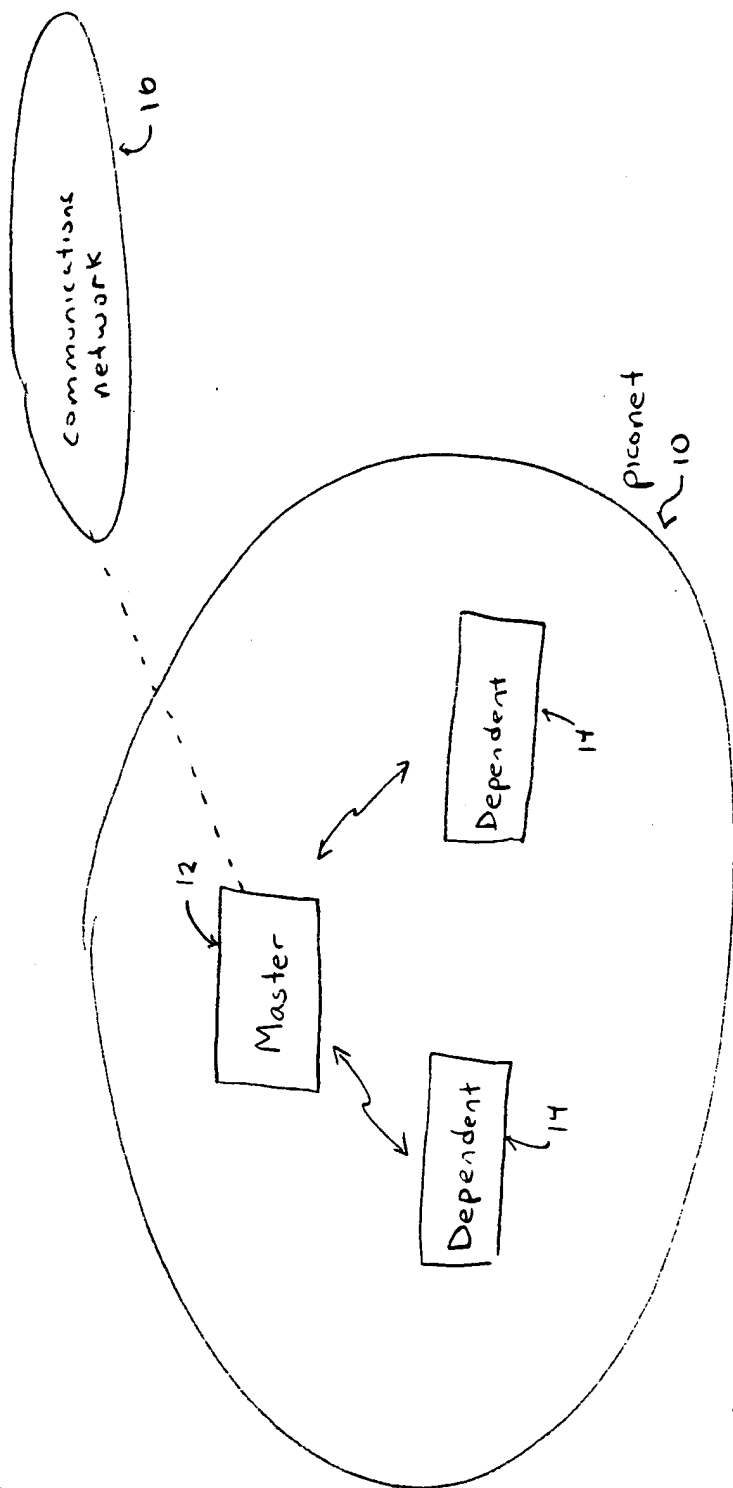
1    17.    The method of claim 11 comprising the additional steps of:  
2                    receiving a registration message indicating the dependent to register with a  
3                    communications network; and  
4                    registering with the communication network using a second frequency band  
5                     $f_{\text{band}}(2)$ .

1    18.    A method for maintaining a communication link comprising the steps of:  
2                    receiving a first registration message at a master device from a dependent over a  
3                    first frequency hopping sequence associated with the master device;  
4                    transmitting a second registration message over a second frequency hopping  
5                    sequence associated with a second master device;  
6                    monitoring a strength at the master device for a signal transmitted by the  
7                    dependent over the first frequency hopping sequence; and  
8                    transmitting an unregistration message over the second frequency hopping  
9                    sequence if the strength of the signal transmitted over the first frequency hopping  
10                  sequence falls below a threshold value.

1    19.    The method of claim 18, wherein the first and second frequency hopping sequences are  
2                    part of a set of frequency hopping sequences on a same frequency band.

ABSTRACT OF THE DISCLOSURE

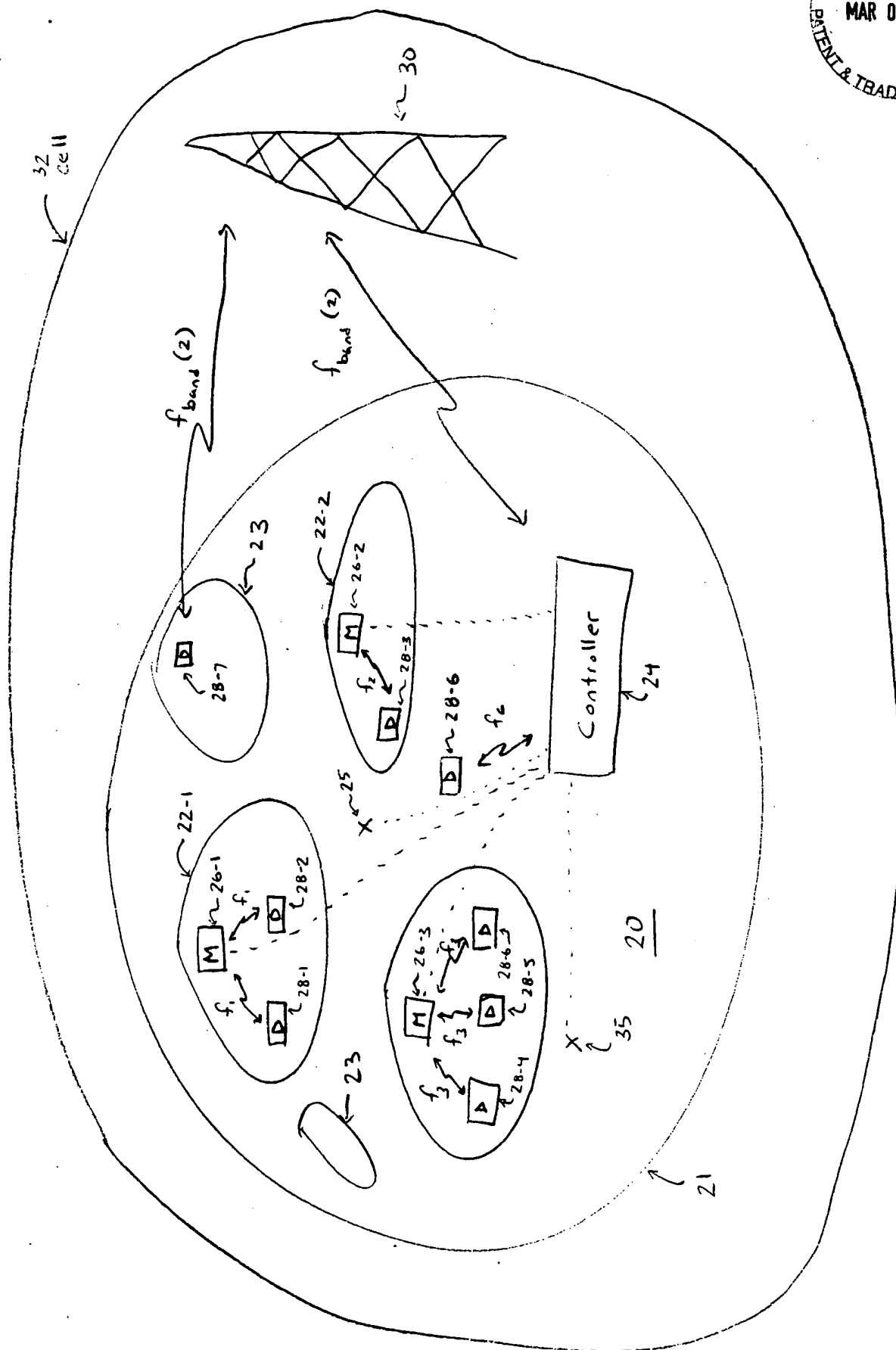
Disclosed herein is a method and apparatus for maintaining communication between a dependent and a communications network when the dependent is outside a coverage area associated with its master using a controller and a communications network. In one  
5 embodiment, when the dependent is in a piconet, the dependent is within communication range of its master using a communication channel on frequency band  $f_{\text{band}}(1)$ . When the dependent moves outside the piconet, the dependent should be within communication range of the controller and, thus, switches to another communication channel within frequency band  $f_{\text{band}}(1)$  such that it may communicate with the controller. When the dependent moves outside the communication range  
10 of the controller, the dependent should be within communication range of a communications network or a base station and, thus, switches to a communication channel within another frequency band  $f_{\text{band}}(2)$ .



Prior Art

Fig. 1

FIG. 2



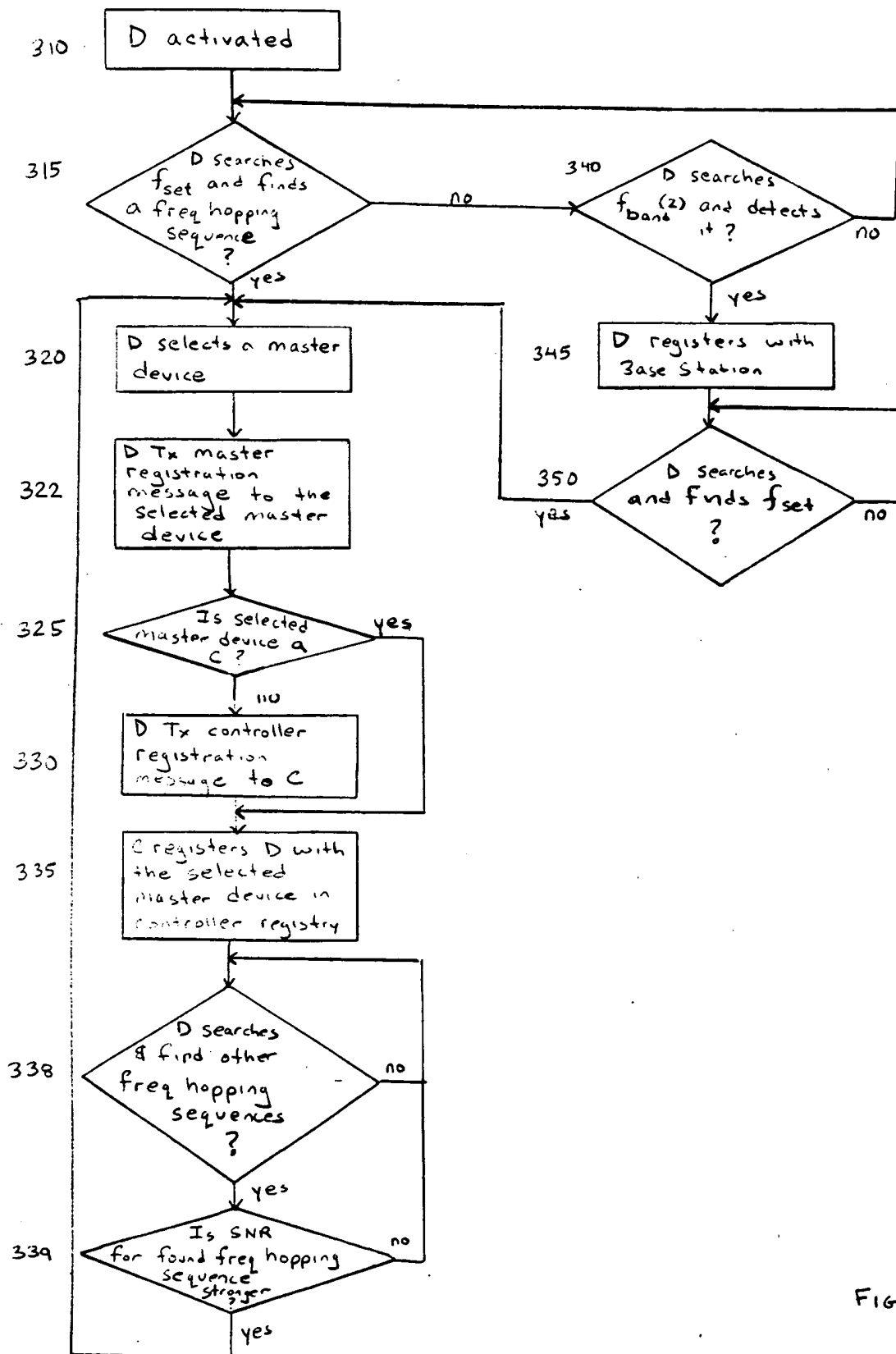


FIG. 3

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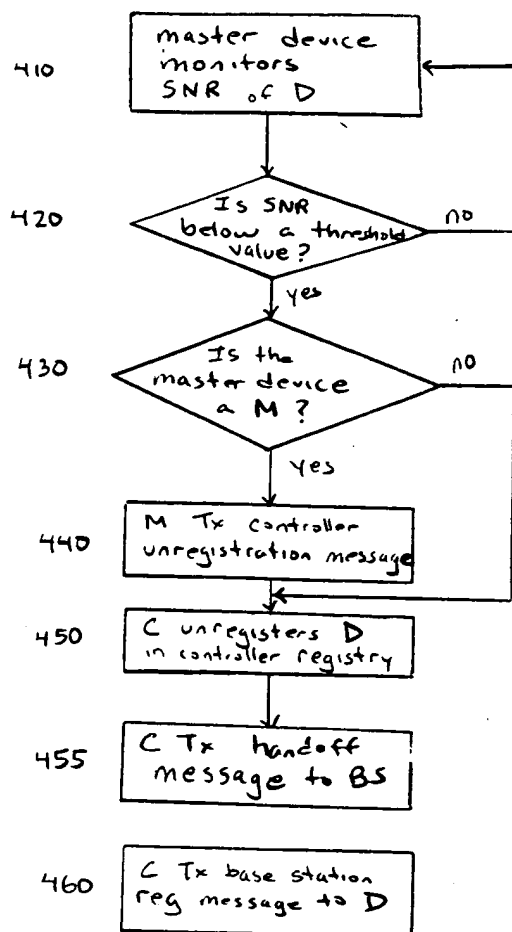


FIG. 4



IN THE UNITED STATES  
PATENT AND TRADEMARK OFFICE

Declaration and Power of Attorney

As the below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled **A Method For Maintaining A Communication Link In Wireless Network Groups** the specification of which is attached hereto.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by an amendment, if any, specifically referred to in this oath or declaration.

I acknowledge the duty to disclose all information known to me which is material to patentability as defined in Title 37, Code of Federal Regulations, 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

None

I hereby claim the benefit under Title 35, United States Code, 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

None

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorney(s) with full power of substitution and revocation, to prosecute said application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent and Trademark Office connected therewith:



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E. Pittampalli 11

Please address all correspondence to the Docket Administrator (Rm. 3C-512), Lucent Technologies Inc., 600 Mountain Avenue, P. O. Box 636, Murray Hill, New Jersey 07974-0636. Telephone calls should be made to Jimmy Goo by dialing 973-386-6377.

Full name of sole inventor: Eshwar Pittampalli

Inventor's signature Eshwar Pittampalli Date 8.2.99

Residence: Randolph, Morris County, New Jersey

Citizenship: United States of America

Post Office Address: 2 Sleepy Hollow Lane  
Randolph, New Jersey 07869



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OCTOBER 07, 1999

PTAS

JIMMY GOO  
DOCKET ADMINISTRATOR  
600 MOUNTAIN AVENUE  
ROOM 3C-512, P.O. BOX 636  
MURRAY HILL, NJ 07974-0636

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REEL/FRAME: 010148/0683  
NUMBER OF PAGES: 3

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:  
PITTAMPALLI, ESHWAR

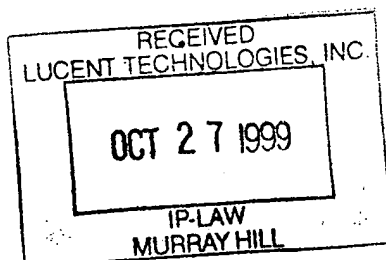
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ASSIGNEE:  
LUCENT TECHNOLOGIES INC.  
600 MOUNTAIN AVENUE  
P.O. BOX 636  
MURRAY HILL, NEW JERSEY 07974-0636

SERIAL NUMBER: 09365678  
PATENT NUMBER:

FILING DATE: 08/02/1999  
ISSUE DATE:

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To the Honorable Commissioner of Patents and Trademarks: Please record and forward original documents or copy thereof.

<b>1. Name of conveying party(ies):</b>  Eshwar Pittampalli  Additional name(s) of conveying party(ies) attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<b>2. Name and address of receiving party(ies):</b>  Name: Lucent Technologies Inc. Street Address: 600 Mountain Avenue P. O. Box 636 Murray Hill, NJ 07974-0636  Additional name(s) & address(es) attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
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<b>9. Statement and signature:</b>  To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.  Jimmy Goo Name of Person Signing  Signature  AUG - 2 1999 Date  10/09/1999 MTHAI1 00000379 122325 09365678 1 FC:581 40.00 CH Total number of pages including Assignment, Cover Sheet, and attachments: 3			

Mail documents to be recorded with required cover sheet information to:  
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Pittampalli 11

## ASSIGNMENT AND AGREEMENT

For value received, I, Eshwar Pittampalli, of Randolph in the County of Morris and State of New Jersey, hereby sell, assign and transfer to Lucent Technologies Inc., a corporation of the State of Delaware, having an office at 600 Mountain Avenue, Murray Hill, New Jersey, 07974-0636, U.S.A., and its successors, assigns and legal representatives, the entire right, title and interest, for the United States of America, in and to certain inventions related to **A Method For Maintaining A Communication Link In Wireless Network Groups** described in an application for Letters Patent of the United States, executed by me of even date herewith, and all the rights and privileges in said application and under any and all Letters Patent that may be granted in the United States for said inventions; and I also concurrently hereby sell, assign and transfer to Lucent Technologies Inc. the entire right, title and interest in and to said inventions for all countries foreign to the United States, including all rights of priority arising from the application aforesaid, and all the rights and privileges under any and all forms of protection, including Letters Patent, that may be granted in said countries foreign to the United States for said inventions.

I authorize Lucent Technologies Inc. to make application for such protection in its own name and maintain such protection in any and all countries foreign to the United States, and to invoke and claim for any application for patent or other form of protection for said inventions, without further authorization from me, any and all benefits, including the right of priority provided by any and all treaties, conventions, or agreements.

I hereby consent that a copy of this assignment shall be deemed a full legal and formal equivalent of any document which may be required in any country in proof of the right of Lucent Technologies Inc. to apply for patent or other form of protection for said inventions and to claim the aforesaid benefit of the right of priority.

I request that any and all patents for said inventions be issued to Lucent Technologies Inc. in the United States and in all countries foreign to the United States, or to such nominees as Lucent Technologies Inc. may designate.

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I agree that, when requested, I shall, without charge to Lucent Technologies Inc. but at its expense, sign all papers, and do all acts which may be necessary, desirable or convenient in connection with said applications, patents, or other forms of protection.

Eshwar Pittampalli  
Eshwar Pittampalli

Date: 8.2.99

United States of America )

State of NJ ) ss.:

County of Morris )

On this 2nd day of August, 19 99, before me personally came Eshwar Pittampalli, to me known to be the individual described in and who executed the foregoing instrument, and acknowledged execution of the same.

Charlene A. Palko  
Notary Public

**CHARLENE A. PALKO**  
Notary Public of New Jersey  
My Commission Expires Aug. 10, 2003